National Aeronautics and Space Administration

Educational Product	
Educators & Students	Grades 5-12

ET-2002-09-106-ARC

Educational Topic

Engineer

Related Job Titles:

Electrical engineer, electronics engineer, mechanical engineer, aerospace engineer, chemical engineer, materials engineer, computer engineer

Job Description:

Engineers design, develop and test products, machinery, factories and systems such as buildings, robots, instruments, spacecraft, airplanes, motors and other equipment. When designing a new product, engineers first figure out what it needs to do. They then design and test the parts, fit the parts together and test to see how successful it is. They also write reports on the product. Most engineers work in office buildings or laboratories. Some work outdoors at construction sites. Some must travel to different work sites.

Interests / Abilities:

- Are you good at math?
- Is your work detailed?
- Do you like to solve problems?
- Are you interested in how things work?
- Do you like working with computers?
- Do you like to take things apart and put them back together?

Suggested School Subjects / Courses:

- Mathematics (algebra, geometry, trigonometry, calculus)
- Science (physics, biology, chemistry,)
- English (writing)
- Social studies (history)
- Computer programming
- Engineering

Education / Training Needed:

The minimum education required for this position is a bachelor's degree in engineering from an accredited college or university. Engineering degrees are generally offered in electrical, mechanical, aerospace or civil engineering. To do research, a Ph.D. is highly desired for this position.

Areas of expertise:

- *Electronics*: design and lead the production of electrical and electronic equipment such as motors, wiring, aircraft, radar and computers
- *Aerospace*: design, test and lead the building of missile, spacecraft and aircraft
- *Chemistry*: use chemistry and engineering to solve problems in producing or using chemicals and to design equipment for producing chemicals
- *Mechanics*: plan and design tools, engines, machines and other equipment such as jet and rocket engines and robots
- *Computers*: design and develop computers or robots
- *Materials*: develop and test new types of materials for aerospace systems and vehicles

Additional Resources:

- Order NASA career videos such as "Engineers: Turning Ideas into Reality," "Careers: Aerospace Engineer" or "Reaching for the Stars" from NASA CORE.
  http://core.nasa.gov
- Robotics Education
  http://robotics.arc.nasa.gov
- Junior Engineering Technical Society
  http://www.asee.org/jets
- Accreditation Board for Engineering and Technology, Inc.
  http://www.abet.org
- American Institute of Aeronautics and Astronautics
  http://www.aiaa.org
- Institute of Electrical and Electronics Engineers
  http://www.ieee.org
- Student Educational Employment Programs
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Summer High School Apprenticeship Research Program (SHARP)
  http://www.mtsibase.com/sharp/

What can I do right now?

- Participate in Bot-Ball or FIRST Robotics competitions
  (see Robotics Education http://robotics.arc.nasa.gov).
- Take as many math and science classes as you can.
- Participate in science fair projects.
- Visit Astro-Venture regularly to participate in chats and activities.
  http://astroventure.arc.nasa.gov
- Call the American Association of Science and Technology Centers for information on science museums in your area that you might visit.
  (202) 783-7200
- Order activity books, poster sets and **engineering** kits by writing to the Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, MI 48121-0930.
- Participate in National Engineers Week.

Please take a moment to evaluate this product at:
http://ehb2.gsfc.nasa.gov/edcats/educational_topic

Your evaluation and suggestions are vital to continually improving NASA educational materials.
Thank you.